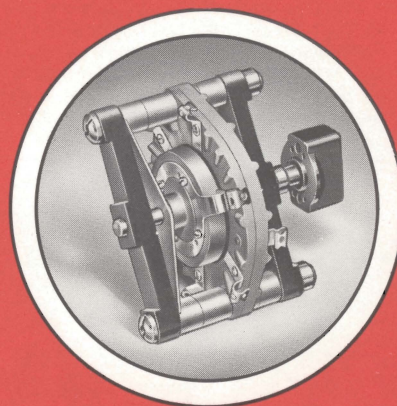


Components Catalog



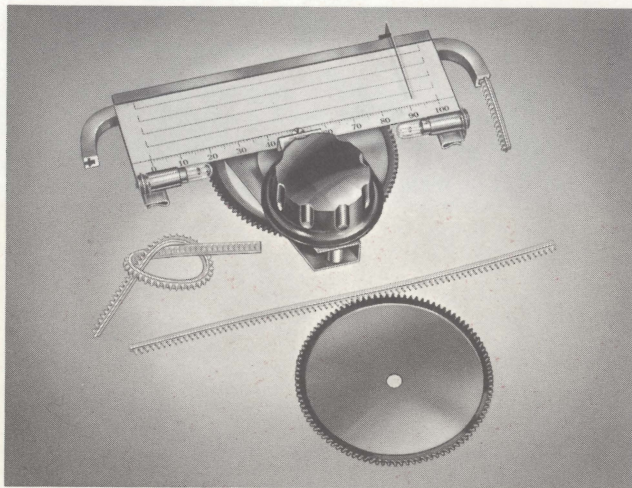
JAMES MILLEN

MANUFACTURING COMPANY, INC.

*Manufacturers of Grid Dip Meters, Amateur Radio Equipment, Module Oscilloscopes,
Magnetic Shields, Delay Lines In Addition To Millen Components.*



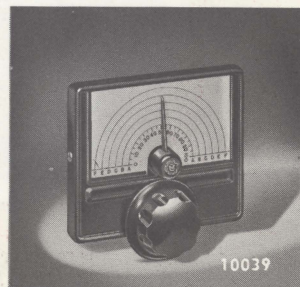
150 EXCHANGE STREET • MALDEN, MASSACHUSETTS, U.S.A.



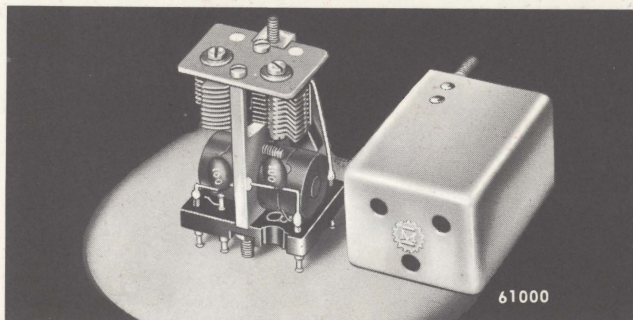
NO.10037 NO-STRING ILLUMINATED DIAL

Reduction 11:1 Scale Length $6\frac{1}{2}$ "

The 10037 is a mechanically engineered dial which completely eliminates the annoyances of string-driven pointers, and provides positive pointer travel and resetability. The pointer is driven positively by a flexible rack which cannot slip. The flexible rack rides in an extruded aluminum channel. This girder-like piece provides rigidity. The drive mechanism is a smooth friction drive with 180° rotation of the output shaft. Teflon bearings assure a lifetime of smooth operation. $5\frac{1}{2}$ turns of the knob results in $6\frac{1}{2}$ " of pointer travel. The dial has a convenient adjustable zero-set and an anti-parallax pointer. The dial is supplied with a bezel for the front of the panel. Outside dimensions of the bezel are $7\frac{5}{8}$ " w x $2\frac{5}{8}$ " h. The behind-the-panel space required is 9" w x $5\frac{3}{4}$ " h x $1\frac{1}{16}$ " d overall.

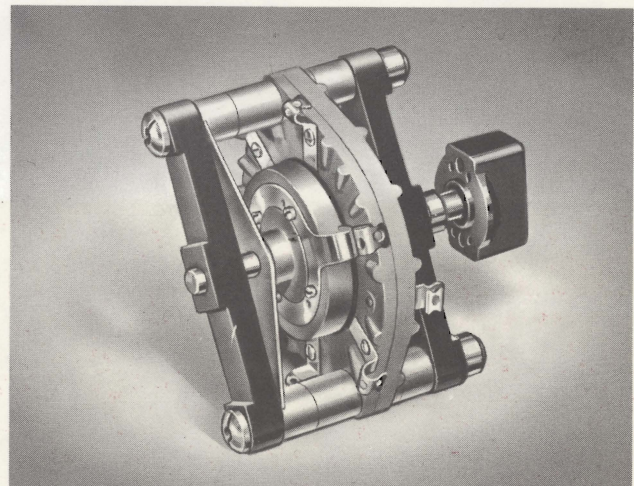


PANEL DIALS — The No. 10035 illuminated panel dial has 12 to 1 ratio; size, $8\frac{1}{2}$ " x $6\frac{1}{2}$ ". Small No. 10039 has 8 to 1 ratio; size, 4" x $3\frac{1}{4}$ ". Both are of compact mechanical design, easy to mount and have totally self-contained mechanism, thus eliminating back of panel interference. Standard finish, either size, flat black art metal.



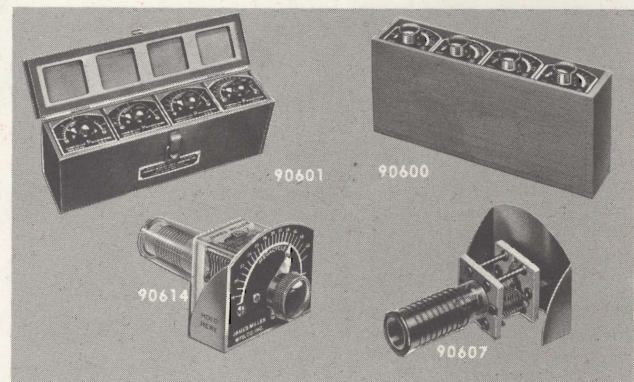
MINIATURE IF TRANSFORMERS — Extremely high Q — approximately 200 — Variable Coupling — (under, critical, and over) with all adjustments on top. Small size $1\frac{1}{16}$ " x $1\frac{1}{16}$ " x $1\frac{1}{8}$ " Molded terminal base. Air capacitor tuned. Coils completely enclosed in cup cores. Tapped primary and secondary. Rugged construction. High electrical stability.

No. 61455, 455 kc. Universal Trans.....
No. 61160, 1600 kc. Universal Trans.....



51000 HIGH VOLTAGE R-F SWITCHES

- 51001** — Single Wafer — 1 pole, 2 to 6 positions
13 KV. D.C. Flashover
20 Amperes
- 51001D** — Single Wafer — 2 poles
2 or 3 positions
9 KV. D.C. Flashover
20 Amperes
- 51002** — Double Wafer — 2 poles
2 to 6 positions
13 KV. D.C. Flashover
20 Amperes
- 51002D** — Double Wafer — 4 poles
2 or 3 positions
9 KV. D.C. Flashover
20 Amperes



MIDGET ABSORPTION FREQUENCY METERS

Code	Description
90604	Range 160 to 210 mc.
90605	Range 3.0 to 10 mc.
90606	Range 9.0 to 23 mc.
90607	Range 23 to 60 mc.
90608	Range 50 to 140 mc.
90609	Range 130 to 170 mc.
90610	Range 105 to 150 mc.
90611	Range 1.5 to 3.5 mc.
90612	Range 3.5 to 8 mc.
90613	Range 8 to 18.5 mc.
90614	Range 18 to 41 mc.
90619	Range 0.35 to 1.0 mc. — Neon Indicator
90620	Range 0.15 to 0.35 mc. — Neon Indicator
90625	Range 2 to 6 mc. — Neon Indicator
90626	Range 5.5 to 15 mc. — Neon Indicator
90600	Complete set of 90605 thru 90608, in case
90601	Complete set Field type Frequency Meters in metal carrying case 1.5 to 40 mc.



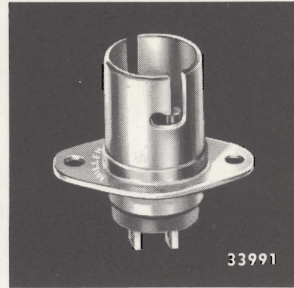
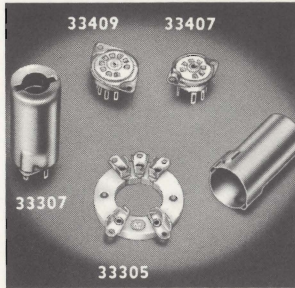
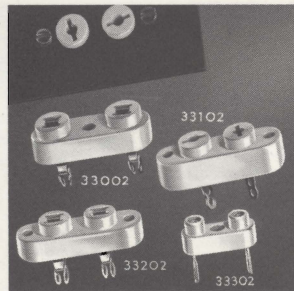
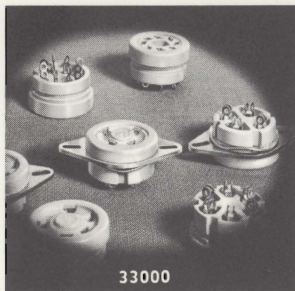
MILLEN TUBE SOCKETS DESIGNED FOR APPLICATION

Long Flashover path to chassis permits use with transmitting tubes, 866 rectifiers, etc. Long leakage path between contacts. Contacts are type proven by hundreds of millions already in government, commercial and broadcast service, to be extremely dependable. Sockets may be mounted either with or without metal flange. Mounts in standard size chassis hole. All types have barrier between contacts and chassis. All but octal and crystal sockets also have barriers between individual contacts in addition.

Voltage regulator dual contact bayonet socket, 33991 black phenolic insulation and 33992 with low loss mica filled phenolic insulation.

MILLEN TUBE SOCKETS

No.	Description	No.	Description
33002	Crystal Socket $\frac{3}{4}$ " x .125"....	33004	4 Pin Tube Socket
33102	Crystal Socket .487" x .095"...	33005	5 Pin Tube Socket
33202	Crystal Socket $\frac{1}{2}$ " x .125"....		
33302	Crystal Socket .487" x .050"...	33008	8 Pin Tube Socket
33407	Miniature Socket only, ceramic	33991	Socket for 991.....
33409	Noval Socket only, ceramic....	33992	Socket for 991.....
33307	Miniature Socket, Shield, ceramic	33207	829 Socket.....
33309	Noval Socket, Shield, ceramic	33305	Acorn Socket.....



FLEXIBLE COUPLINGS — The No. 39000 series of MilLEN "Designed for Application" flexible coupling units include, in addition to improved versions of the conventional types, also such exclusive original designs as the No. 39001 insulated universal joint and the No. 39006 "slide-action" coupling (in both steatite and bakelite insulation). The No. 39006 "slide-action" coupling permits longitudinal shaft motion, eccentric shaft motion and out-of-line operation, as well as angular drive.

The No. 39005 and 39005-B (high torque) are similar to the No. 39001, but are not insulated. The steatite insulated No. 39001 has a special anti-backlash pivot and socket grip feature. All of the above illustrated units are for $\frac{1}{4}$ " shaft and are standard production type units.

The No. 39016 incorporates features which have long been desired in a flexible coupling. No Backlash — High Flexibility — Higher Breakdown Voltage — Smaller Diameter — Shorter Length —

CERAMIC PLATE OR GRID CAPS — Soldering lugs and contact one-piece. Lug ears annealed and solder dipped to facilitate "mechanical plus soldered" connection of cable.

No. 36001— $\frac{7}{16}$ " No. 36002— $\frac{3}{8}$ " No. 36004— $\frac{1}{4}$ "

SAFETY TERMINAL — Combination high voltage terminal and thru-bushing. Tapered contact pin fits firmly into conical socket providing large area, low resistance connection. Pin is swivel mounted in cap to prevent twisting of lead wire.

No. 37001, Black or Red No. 37501, Low loss

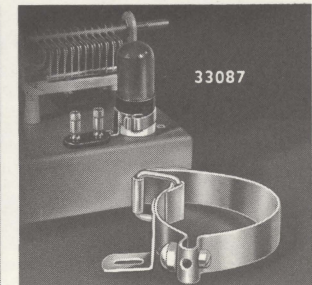
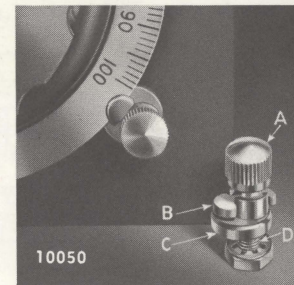
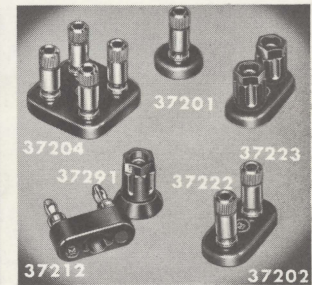
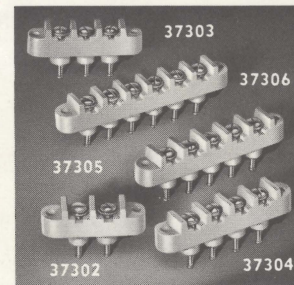
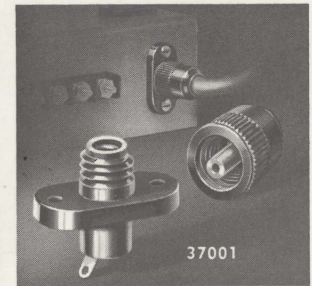
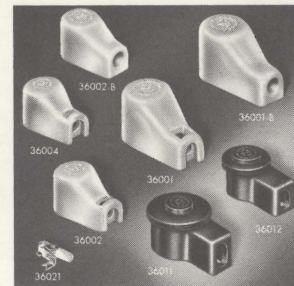
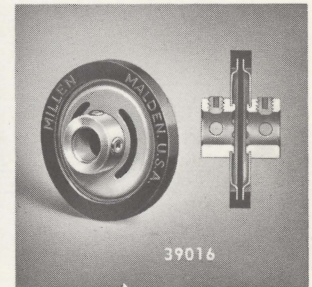
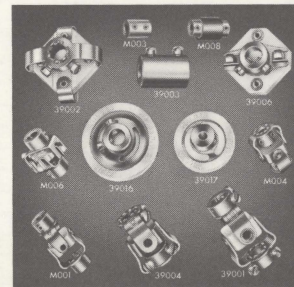
STEATITE TERMINAL STRIPS — Terminal and lug are one piece. Lugs are turret type and are free floating so as not to strain L522 ceramic on wide temperature variations. Easy to mount with series of round holes. 1400 volt and 3500 volt series.

POSTS, PLATES, AND PLUGS — The No. 37200 series, including both insulated and non-insulated binding posts with associated plates and plugs, provide various combinations to meet most requirements. The posts have captive heads and keyed mounting. The No. 37291 on No. 37223 are standard in black or red with other colors on special order. No. 37201, No. 37202, and No. 37204 are available in black, red, or low loss. The No. 37202 is also available in steatite.

No.	Description	No.	Description
37201	Single plates, pr.	37204	Double dual plates, pr.
37291	Single plates (tapered), pr.	37212	Dual plug
37202	Dual plates, pr.	37222	Non-insulated binding post
		37223	Insulated binding post

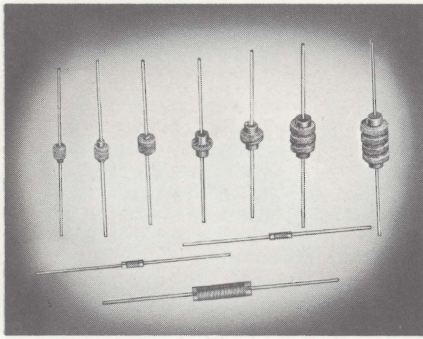
DIAL LOCK — Compact, easy to mount, positive in action, does not alter dial setting in operation! Rotation of knob "A" depresses finger "B" and "C" without imparting any rotary motion to Dial. Single hole mounted. No. 10050

TUBE CLAMP — No. 33087 is easy to use, easy to install, effective in function. Available in special sizes for all types of tubes. Single hole mounting. Spring steel, cadmium plated.



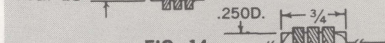
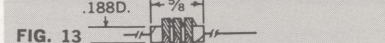
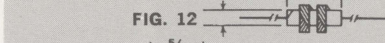
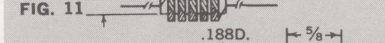
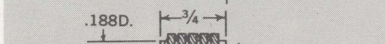
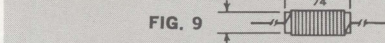
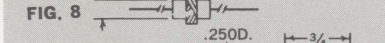
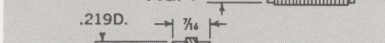
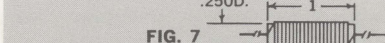
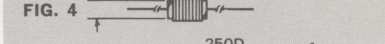
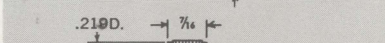
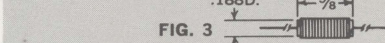
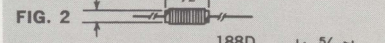
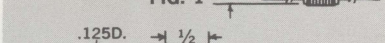
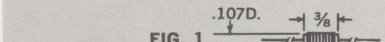


34300 SERIES INDUCTORS

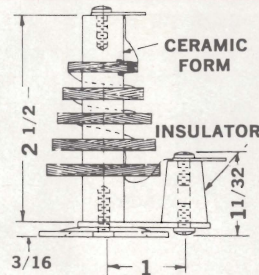
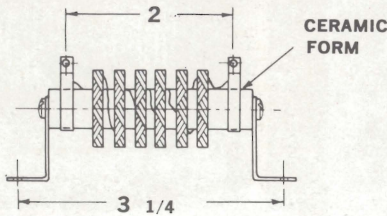


Part	Inductance Microhenries	Self Resonant Freq. Mc.	Fig. No.
34300-0.15	0.15 ± 10%	645 MC.	1
34300-0.22	0.22 ± 10%	510	1
34300-0.33	0.33 ± 10%	445	1
34300-0.47	0.47 ± 10%	375	2
34300-0.5	0.5 ± 10%	350	2
34300-0.68	0.68 ± 10%	300	2
34300-0.82	0.82 ± 10%	265	2
34300-1	1 ± 10%	175	4
34300-1.1	1.1 ± 10%	210	4
34300-1.2	1.2 ± 10%	210	3
34300-1.5	1.5 ± 5%	190	3
34300-1.8	1.8 ± 5%	171	3
34300-2.2	2.2 ± 5%	160	3
34300-2.5	2.5 ± 5%	140	3
34300-2.7	2.7 ± 5%	142	3
34300-3	3 ± 5%	132	3
34300-3.3	3.3 ± 5%	120	3
34300-3.9	3.9 ± 5%	118	3
34300-4.7	4.7 ± 5%	105	3
34300-5	5 ± 5%	85	3
34300-5.6	5.6 ± 5%	98	3
34300-6.2	6.2 ± 5%	90	7
34300-6.8	6.8 ± 5%	90	3
34300-8.2	8.2 ± 5%	81	3
34300-10	10 ± 5%	65	7

Catalog Number	Inductance Microhenries	Self Resonant Freq. Mc.	Fig. No.
34300-12	12 ± 5%	65	3
34300-15	15 ± 5%	22	8
34300-18	18 ± 5%	22	8
34300-20	20 ± 5%	27	8
34300-22	22 ± 5%	46	9
34300-24	24 ± 5%	24	8
34300-25	25 ± 5%	26	8
34300-27	27 ± 5%	23	8
34300-30	30 ± 5%	15	8
34300-33	33 ± 5%	36	9
34300-36	36 ± 5%	35	9
34300-39	39 ± 5%	18	8
34300-47	47 ± 5%	18	8
34300-50	50 ± 5%	18	8
34300-56	56 ± 5%	28	9
34300-68	68 ± 5%	26	9
34300-75	75 ± 5%	12	8
34300-100	100 ± 5%	13	8
34300-120	120 ± 5%	12	8
34300-150	150 ± 5%	11	8
34300-180	180 ± 5%	9.8	8
34300-200	200 ± 5%	7.5	8
34300-220	220 ± 5%	12	11
34300-250	250 ± 5%	6.8	8
34300-270	270 ± 5%	11.9	11
34300-300	300 ± 5%	6	8
34300-330	330 ± 5%	8.5	17
34300-350	350 ± 5%	8	12
34300-470	470 ± 5%	7.6	13
34300-500	500 ± 5%	7.5	13
34300-750	750 ± 5%	5.8	14
34300-820	820 ± 5%	5.7	13
34300-1000	1000 ± 5%	4	12
34300-1200	1200 ± 5%	4.8	15
34300-1800	1800 ± 5%	2.6	16
34300-2200	2200 ± 5%	2.8	18
34300-2500	2500 ± 5%	2.7	18
34300-10000	10000 ± 5%	1.5	18



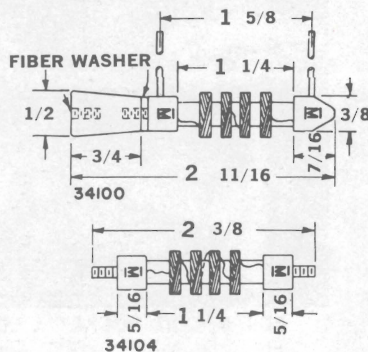
TRANSMITTING R-F CHOKES



No. 34140 No. 34156 No. 34152 No. 34154

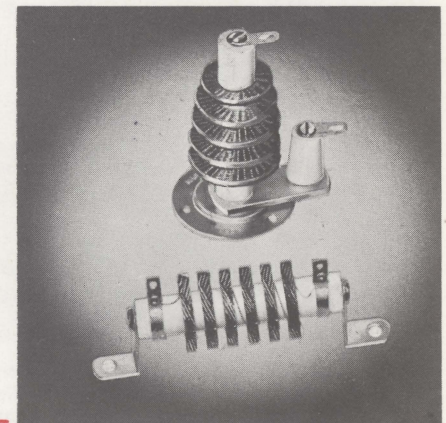
INDUCTANCE:	1.4	2.5	4.0	1.0	millihenries
RESISTANCE:	6.25	10.6	13.5	5.5	ohms
DC CURRENT:	500	500	500	600	milliamperes
VOLTAGE RATING:	4500	4500	8000	8000	VDC

34100 SERIES R-F CHOKE COILS



Ceramic forms and insulators. Leads: #18 tinned solid wire, 2 1/8" long. Mounting screws, 6-32 threaded x 1/4" long.

Catalog Number	Inductance Millihenries	Maximum Current
34100	2.5	250 MA.
34101	2.5	250 MA.
34102	2.5	250 MA.
34103	2.5	250 MA.
34104	2.5	250 MA.
34105	1.0	300 MA.
34106	1.0	300 MA.
34107	1.0	300 MA.
34108	1.0	300 MA.
34109	1.0	300 MA.





AIR WOUND TRANSMITTING INDUCTORS

42000 SERIES — 500 WATT COILS

Catalog Number	Inductance Micro-henries	Frequency MC.	Type Link	Link Placement	Coil Length Inches	Coil O. D. Inches	Number of Turns	A. W. G. Wire Size
42010	1.2	28	Variable	Center	4-1/4	2-1/8	6	6
42015	1.3	21	Variable	Center	4-1/4	2-1/8	6	6
42020	5.0	14	Variable	Center	2-7/8	2-9/16	10	12
42040	17.4	7	Variable	Center	4-1/4	2-9/16	22	12
42080	51.1	3.5	Variable	Center	4-21/32	2-9/16	40	16
42160	84.5	1.8	Variable	Center	4-11/16	2-5/8	54	16

43000 SERIES — 120 WATT COILS

43011	0.75	28	Fixed	Center	1	1-1/2	4	16
43012	0.75	28	Fixed	End	1	1-1/2	4	16
43015	1.35	21	Fixed	Center	1-3/16	1-1/2	6	16
43021	2.1	14	Fixed	Center	1-1/2	1-1/2	8	16
43022	2.5	14	Fixed	End	1-1/2	1-1/2	9	16
43041	11	7	Fixed	Center	2	1-1/2	22	16
43042	11	7	Fixed	End	2	1-1/2	22	16
43081	32	3.5	Fixed	Center	2	1-1/2	38	20
43082	36.2	3.5	Fixed	End	2	1-1/2	40	20
43115	1.9	21	Fixed	End	1-1/8	1-1/2	7	16
43161	122	1.8	Fixed	Center	2-15/16	1-13/16	76	22
43162	57	1.8	Fixed	End	1-7/8	1-1/2	51	22

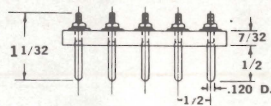
44000 SERIES — 150 WATT COILS

44005	0.81	50	Variable	Center	1-3/4	1-25/32	4	1/8 tube
44010	1.3	28	Variable	Center	2-1/8	1-13/16	6	1/8 tube
44015	2.4	21	Variable	Center	2-1/8	2-5/8	6	12
44020	5.4	14	Variable	Center	1-3/8	2-5/8	10	14
44040	15	7	Variable	Center	2-5/8	2-5/8	18	14
44080	49.4	3.5	Variable	Center	2-3/4	2-5/8	32	16
44160	54	1.8	Variable	Center	2-13/16	2-5/8	36	18

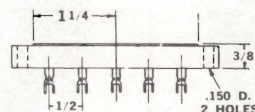
48000 SERIES — 120 WATT VHF COILS

48002	0.083	144	Fixed	Center	2	1/2	2	5/16" ribbon
48006	0.68	50	Fixed	Center	3/4	7/8	6	14
48011	2.6	28	Fixed	Center	7/8	27/32	12	16
48015	4.9	21	Fixed	Center	1-3/8	1-1/32	17	16
48021	15.4	14	Fixed	Center	1-9/16	1-1/32	26	16
48102	0.119	144	Variable	Center	1-1/16	1-3/32	2	1/8 tube
48106	1.35	50	Variable	Center	2-3/4	1-1/16	12	1/8 tube
48111	3.75	28	Variable	Center	2-1/4	7/8	22	16
48115	7.9	21	Variable	Center	2-5/8	1-1/16	26	16
48121	15.0	14	Variable	Center	2-7/16	1-1/16	38	18

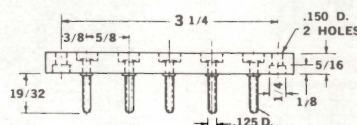
No. 40205 — 5-PRONG COIL PLUG
Ceramic base. Pins brass nickel plated.
2500 VDC rating. Midget size. Fits
41205 socket.



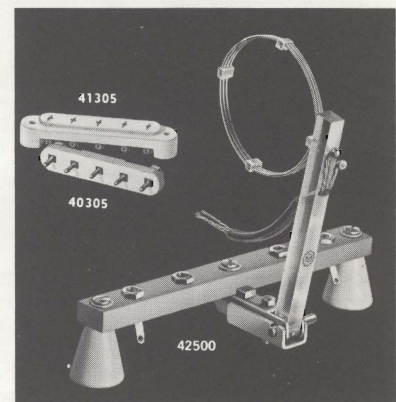
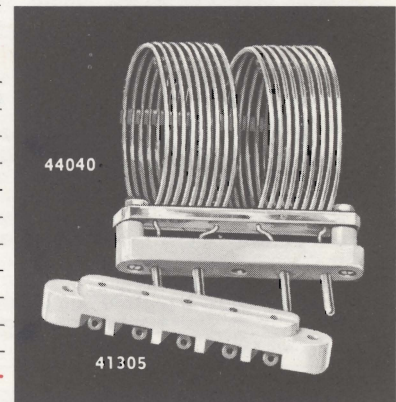
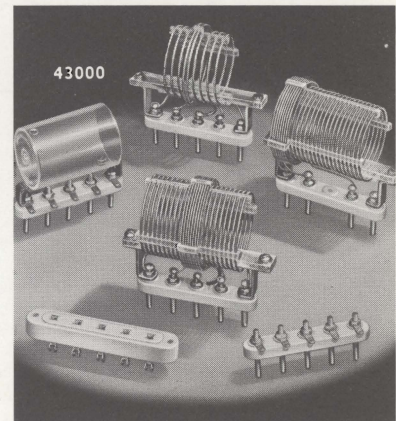
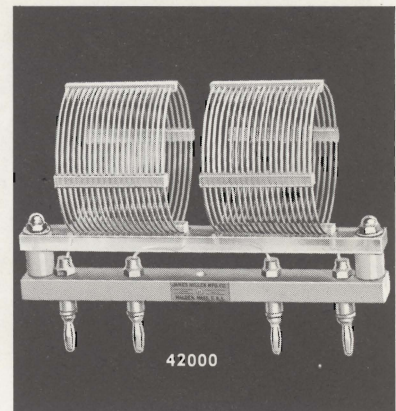
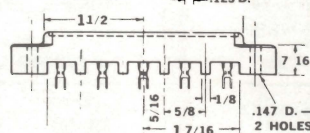
No. 41205 — 5-JACK COIL SOCKET
Ceramic base. Lugs phosphor bronze
silver plated. 2500 VDC rating.
Midget size. Fits 40205 plug.



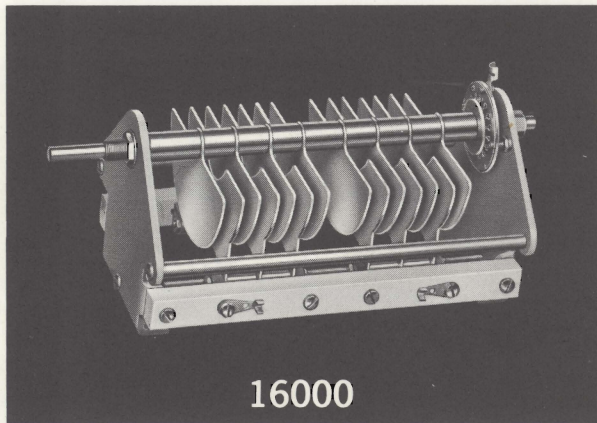
No. 40305 — 5-PRONG COIL PLUG
Molded base. Pins brass nickel plated.
4200 VDC rating. Intermediate size. Fits
41305 socket.



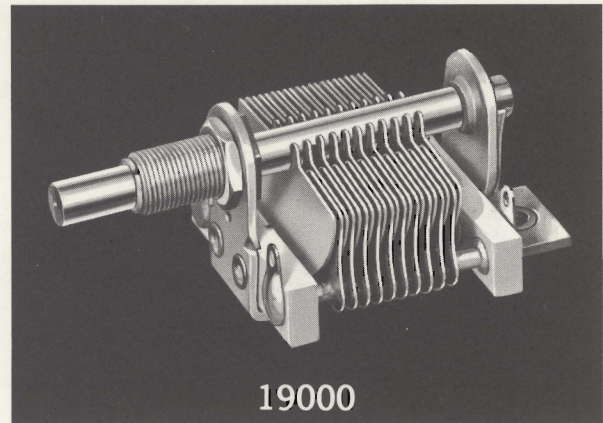
No. 41305 — 5-JACK COIL SOCKET
Ceramic base. Lugs phosphor bronze
silver plated. 4200 VDC rating. Inter-
mediate size. Fits 40305 plug.



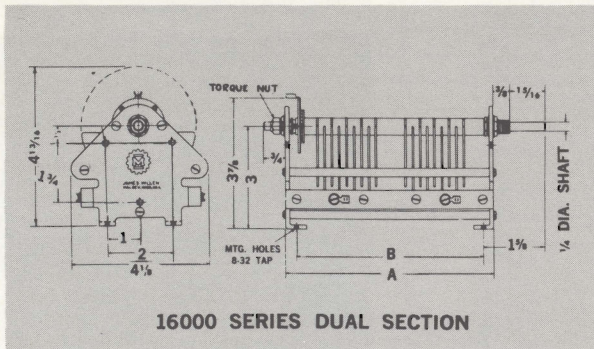
500 W. COIL SOCKET & LINK
For use with 42000 series
500 watt transmitting coils.



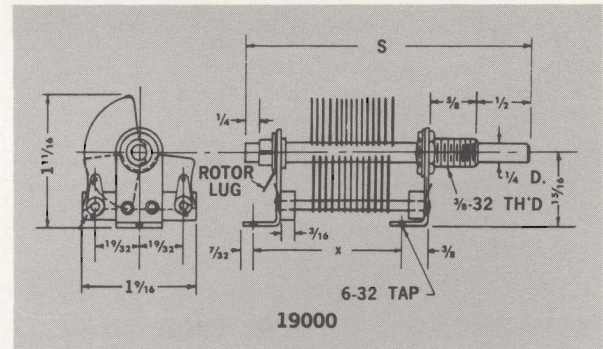
16000



19000



16000 SERIES DUAL SECTION



19000

16000 SERIES TRANSMITTING CAPACITORS

FEATURES: The 16000 Series has sturdy construction, thick, round-edged, polished aluminum plates with $1\frac{3}{4}$ " radius. Also has constant impedance, heavy current, multiple finger rotor contactor of unique design. Available in single and double sections and many capacities and plate spacings. Other features: aluminum frame, Grade L423 ceramic bars, brass hardware, nickel-plating.

SINGLE SECTION — 0.171" AIR GAP — 6000 V. PEAK

Millen Cat. No.	Capacity MMF	Dimension "A"	Dimension "B"	Plates Per Sec.
16550	13. - 52	$3\frac{3}{8}$ "	$2\frac{3}{4}$ "	5R- 4S
16510	17. -101	$6\frac{1}{4}$ "	$5\frac{5}{8}$ "	9R- 8S
16520	37. -203	$9\frac{1}{2}$ "	$8\frac{7}{8}$ "	18R-16S
16530	45. -297	$12\frac{1}{2}$ "	$11\frac{7}{8}$ "	25R-24S

SINGLE SECTION — 0.265" AIR GAP — 9000 V. PEAK

16559	11. - 65	$6\frac{1}{4}$ "	$5\frac{5}{8}$ "	8R- 7S
16512	40. -128	$11\frac{1}{2}$ "	$10\frac{7}{8}$ "	16R-14S

DOUBLE SECTION — 0.077" AIR GAP — 3000 V. PEAK

16200	15. -195	$6\frac{1}{4}$ "	$5\frac{5}{8}$ "	8R- 8S
16250	20. -255	$9\frac{1}{2}$ "	$8\frac{7}{8}$ "	10R-10S

DOUBLE SECTION — 0.171" AIR GAP — 6000 V. PEAK

16030	8.5- 27	$4\frac{1}{4}$ "	$3\frac{5}{8}$ "	3R- 2S
16050	12. - 51	$6\frac{1}{4}$ "	$5\frac{5}{8}$ "	5R- 4S
16100	19. -101	$9\frac{1}{2}$ "	$8\frac{7}{8}$ "	9R- 8S

DOUBLE SECTION — 0.265" AIR GAP — 9000 V. PEAK

16029	11. - 29	$6\frac{1}{4}$ "	$5\frac{5}{8}$ "	4R- 3S
16059	20. - 64	$11\frac{1}{2}$ "	$10\frac{7}{8}$ "	8R- 7S

19000 SERIES TUNING CAPACITORS

FEATURES: The 19000 Series is a versatile single section tuning capacitor to meet special requirements available below. Threaded brass front bearing and tapped end brackets permit panel or base mounting. This series has Grade L423 ceramic insulators, soldered brass rotors and stators; rotor shaft supported on bearings at both front and rear of capacitor. Brass plates are nickel-plated.

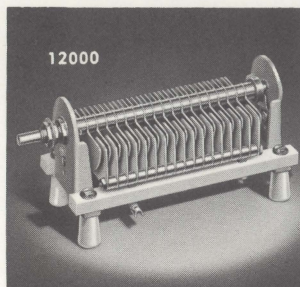
MODEL SPECIFICATIONS: Straight line capacity characteristic. Single spaced types have 0.022" air gap — 850 V. peak. The 19000 Series may be supplied with wide air gaps. Specify type number followed by the designation of W or Y. Air gap: (W) 0.040" — 1350 V. peak; (Y) 0.066" — 2250 V. peak.

19000 SERIES — 0.022" AIR GAP — 850 V. PEAK

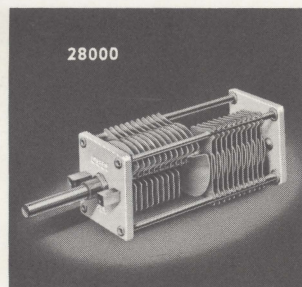
Millen Cat. No.	Max. Cap.	Min. Cap.	Rotor Plates	Stator Plates	Dim. "S"	Dim. "X"
19025	30.5 mmf	5.7 mmf	2	2	$2\frac{5}{8}$ "	$\frac{7}{8}$ "
19035	39.1 mmf	6.0 mmf	3	2	$2\frac{5}{8}$ "	$\frac{7}{8}$ "
19050	58.0 mmf	6.5 mmf	4	3	$2\frac{1}{2}$ "	1"
19075	80.5 mmf	7.5 mmf	5	5	$2\frac{7}{8}$ "	$1\frac{1}{8}$ "
19100	107.0 mmf	8.2 mmf	7	6	3"	$1\frac{1}{4}$ "
19140	148.0 mmf	9.7 mmf	9	9	$3\frac{3}{16}$ "	$1\frac{3}{8}$ "
19200	232.5 mmf	11.7 mmf	14	13	$3\frac{1}{2}$ "	$1\frac{3}{4}$ "
19250	272.5 mmf	13.0 mmf	17	16	$3\frac{3}{4}$ "	2"
19280	285.3 mmf	20.0 mmf	18	17	$3\frac{3}{4}$ "	$2\frac{1}{16}$ "
19335	339.0 mmf	14.7 mmf	21	20	$4\frac{1}{8}$ "	$2\frac{3}{8}$ "

19000 SERIES — 0.066" AIR GAP — 2250 V. PEAK

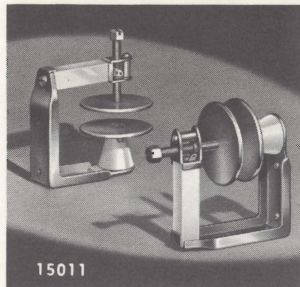
19935	40.0 mmf	8.8 mmf	6	6	$3\frac{5}{8}$ "	$1\frac{3}{4}$ "
19950	60.0 mmf	11.6 mmf	9	9	4"	$2\frac{1}{4}$ "



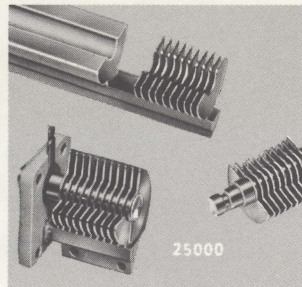
12000



28000



15011



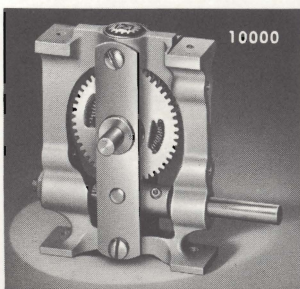
25000

12000 SERIES TRANSMITTING CAPACITORS — Rigid heavy channeled aluminum end plates. Ceramic insulation, polished or plain edges. One piece rotor contact spring and connection lug. Compact, easy to mount with connector lugs in convenient locations. Available in single and double sections and many capacities and plate spacings.

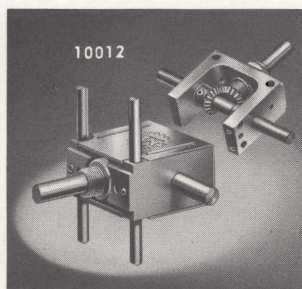
28000 SERIES VARIABLE AIR CAPACITORS — "Designed for Application," double bearings, steatite end plates, plated brass plates. Single or double section .022" to .066" air gap. End plate size: $1\frac{1}{8}$ " x $1\frac{1}{4}$ ". Rotor plate radius: $\frac{3}{4}$ ". Shaft lock, rear shaft extension, special mounting brackets, etc., to meet your requirements. The 28000 series has semi-circular rotor plate shape. Many stock sizes.

NEUTRALIZING CAPACITOR — Designed originally for use in our own Power Amplifier, the No. 15011 disc neutralizing capacitor has such unique features as rigid channel frame, horizontal or vertical mounting, fine thread over-size lead screw with stop to prevent shorting and rotor lock. Heavy rounded-edged polished aluminum plates are 2" diameter. Glazed steatite insulation. No. 15011

NO. 25000 SERIES MACHINED FROM SOLID BARS OF EXTRUDED BRASS — Modern demands for miniature precision, high Q variable air dielectric capacitors with high reliability require that all of the stator plates be machined from a solid block of brass and that all of the rotor plates be machined from a solid block of brass.



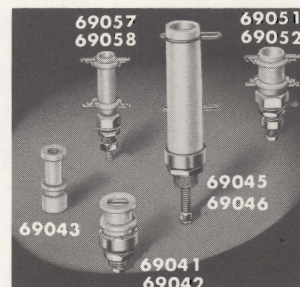
10000



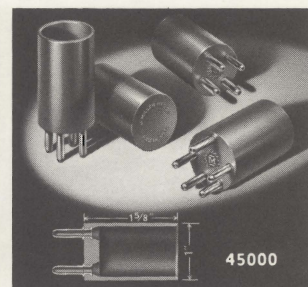
10012

WORM DRIVE UNIT — Cast aluminum frame may be panel or base mounted. Spring loaded split gears to minimize back lash. Standard ratio 16/1. Also in 48/1, 36/1, 12/1. No. 10000 — (state ratio)

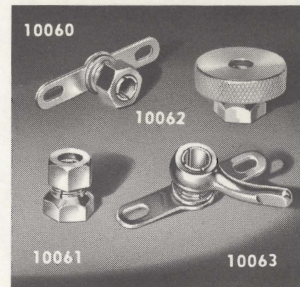
RIGHT ANGLE DRIVE — Extremely compact, with provisions for many methods of mounting. Ideal for operating potentiometers, switches, etc., that must be located, for short leads, in remote parts of chassis. No. 10012 For $\frac{1}{4}$ " shaft:



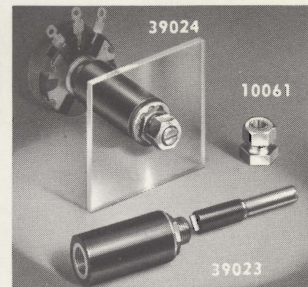
69057
69058
69051
69052
69045
69046
69043
69041
69042



45000



10060
10062
10061
10063



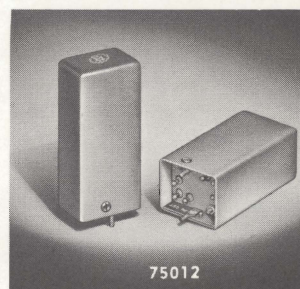
39024
10061
39023

PERMEABILITY TUNED CERAMIC FORMS — The 69000 series of ceramic permeability tuned unshielded forms are stock items. Winding diameters available from $\frac{1}{8}$ " to $\frac{1}{2}$ " and winding space from $\frac{1}{32}$ " to $\frac{1}{2}$ ".
No. 69041—(Copper Slug)..... No. 69052—(Iron Core).....
No. 69042—(Iron Core)..... No. 69054—(Iron Core).....
No. 69043—(Iron Core)..... No. 69055—(Copper Slug).....
No. 69044—(Brass Slug)..... No. 69056—(Iron Core).....
No. 69045—(Copper Slug)..... No. 69057—(Copper Slug).....
No. 69046—(Iron Core)..... No. 69058—(Iron Core).....
No. 69047—(Copper Slug)..... No. 69061—(Copper Slug).....
No. 69048—(Iron Core)..... No. 69062—(Iron Core).....
No. 69051—(Copper Slug).....

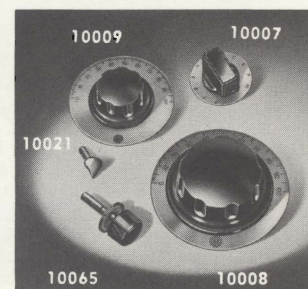
MILLEN COIL FORMS — Made of low loss mica filled brown bakelite. Guide funnel makes for easy threading of leads through pins.
No. 45000 — No pins No. 45004 — 4 pins No. 45005 — 5 pins

SHAFT LOCKS — In addition to No. 10060 and No. 10061 shaft locks, we can also furnish such variations as the No. 10062 and No. 10063 for easy thumb operation. The No. 10061 converts any plain " $\frac{1}{4}$ " shaft" control, condenser, etc. from "plain" to "shaft locked" type.

HIGH VOLTAGE INSULATED SHAFT EXTENSION — No. 10061 shaft locks and the No. 39023 insulated high voltage potentiometer extension mountings are available as a single integrated unit — the No. 39024. The standard shaft has provision for screw driver adjustment. Extension shaft and insulated coupling are molded as a single unit to provide accuracy of alignment.
No. 39023, non locking type .. No. 39024, locking type ..



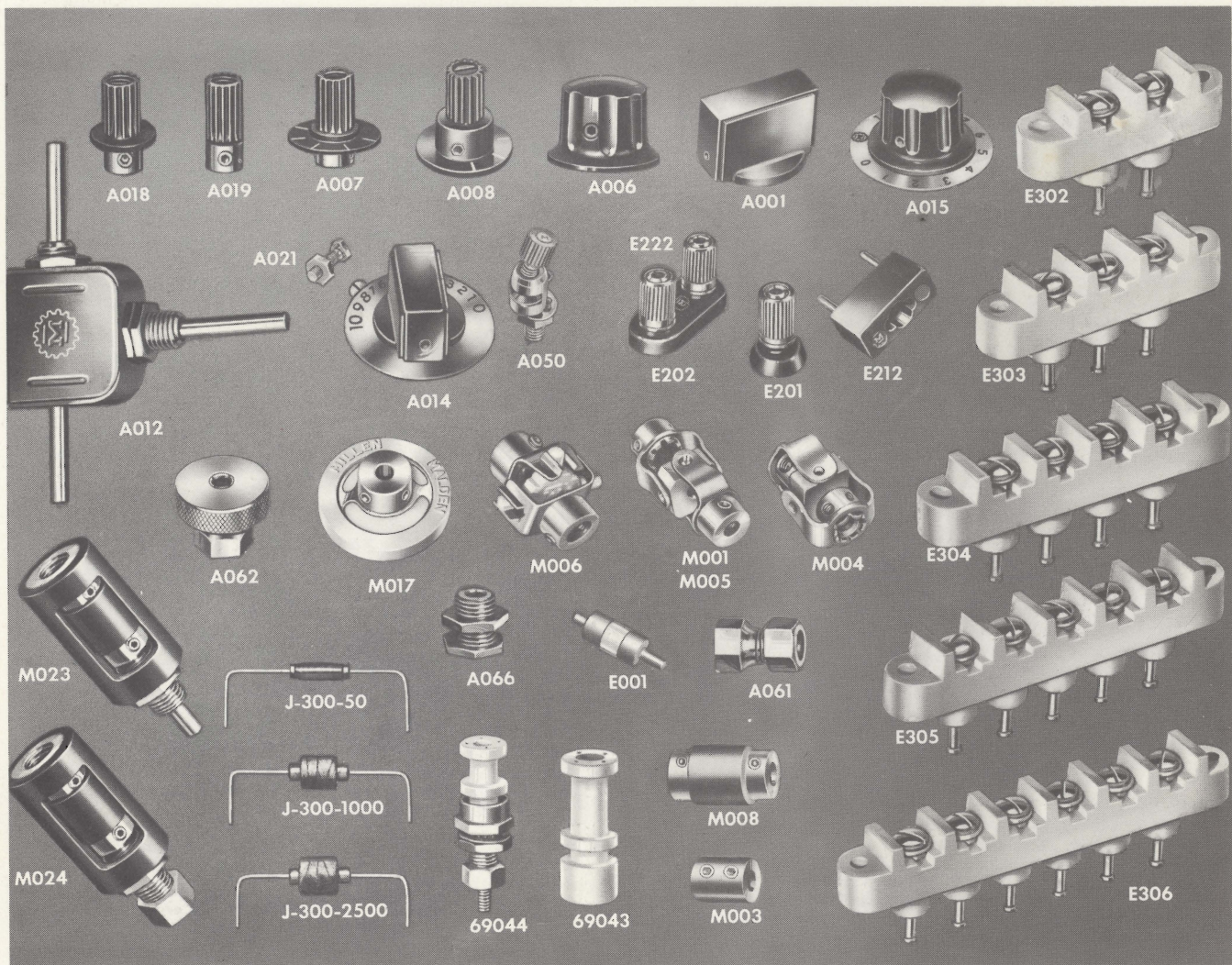
75012



10009
10007
10021
10065
10008

PHASE-SHIFT NETWORK — A laboratory aligned pair of networks in a $2" \times 1\frac{1}{8}" \times 4"$ case with a phase shift between the two networks of $90^\circ \pm 1.3^\circ$ over a frequency range of 225 to 2750 cycles. For use in SSB transmitter or receiver. 40 db suppression of the unwanted sideband. No. 75012

DIALS AND KNOBS — Just a few of the many stock types of small dials and knobs are illustrated herewith. 10007 is $1\frac{5}{8}$ " diameter, 10009 is $2\frac{3}{4}$ " and 10008 is $3\frac{1}{2}$ ".



MINIATURIZED COMPONENTS

DESIGNED for APPLICATION miniaturized components developed for use in our own equipment such as the 90901 Oscilloscope, are available for separate sale. Many of these parts are similar, in most details except size, to their equivalents in our standard component parts group. In certain devices where complete miniaturization is not paramount, a combination of standard and miniature components may possibly be used to advantage. For convenience, we have also listed on this page the extremely small sized coil forms from our standard catalog.

Code	Description
A001	Bar knob for $\frac{1}{8}$ " shaft. $\frac{1}{2}$ " high by $\frac{3}{4}$ " long.
A006	Fluted black plastic knob with brass insert for $\frac{1}{8}$ " shaft. $\frac{1}{2}$ " high by $\frac{3}{4}$ " diameter.
A007	$\frac{1}{4}$ " black plastic dial knob with brass insert for $\frac{1}{8}$ " shaft. $\frac{5}{8}$ " diameter dial. $\frac{1}{4}$ " high.
A008	$\frac{1}{4}$ " black plastic knob. Same as no. A007 except for style.
A012	Right angle drive for $\frac{1}{8}$ " shafts. Single hole mounting.
A014	1" bar dial for $\frac{1}{8}$ " shaft. $\frac{1}{2}$ " high. 180° or 280° dials for clockwise or counter-clockwise rotation.
A015	1" fluted knob dial for $\frac{1}{8}$ " shaft. $\frac{1}{2}$ " high. Same dial plates as no. A014.
A017	$1\frac{1}{8}$ " diameter fluted black plastic knob for $\frac{1}{8}$ " shaft.
A018	Knob, same as no. A007 except with $\frac{1}{4}$ " diameter flange.
A019	Knob, same as no. A007, but without dial.
A021	Miniature metal index for miniature dials.
A050	Miniature dial lock.
A061	Shaft lock for $\frac{1}{8}$ " diameter shaft. $\frac{1}{4}$ "-32 bushing. Nickel plated brass.
A062	Shaft lock with knurled locking nut.
A066	Shaft bearing for $\frac{1}{8}$ " diameter shafts. Nickel plated brass. Fits $\frac{1}{4}$ " diameter hole.

Code	Description
E001	Steatite ceramic standoff or tie-point. Integral mounting eyelet. 0.205" overall diameter.
E201	Black or red plastic binding post plates for No. E222.
E202	Black or red plastic plates for two binding posts spaced $\frac{1}{2}$ ".
E212	Black or red plastic plug for two binding posts spaced $\frac{1}{2}$ ".
E222	Metal binding post with jack top.
E302A	to E306A Steatite ceramic terminal strips. $\frac{1}{8}$ " wide. Terminals spaced $\frac{3}{8}$ " on centers. Screw type or solder type thru-terminals.
J300-3.3	to J300-2500 Complete line of miniature inductances 3.3 to 2500 microhenries. $\frac{3}{8}$ " long. Diameter 0.115" to 0.313".
M001	Insulated universal joint style flexible coupling for $\frac{1}{8}$ " dia. shafts.
M003	Solid coupling for $\frac{1}{8}$ " dia. shafts. Nickel plated brass.
M004	Universal joint style flexible coupling for $\frac{1}{8}$ " diameter shafts. Inverted hubs for short length. Not insulated.
M005	Universal joint style flexible coupling for $\frac{1}{8}$ " diameter shafts. External hub. Not insulated.
M006	Universal joint style flexible coupling for $\frac{1}{8}$ " diameter shafts. Spring finger. Steatite ceramic insulation.
M008	Plastic insulated coupling with nickel plated brass inserts for $\frac{1}{8}$ " diameter shafts.
M017	Plastic insulated flexible coupling for $\frac{1}{8}$ " diameter shafts. $\frac{1}{32}$ " long by $\frac{1}{16}$ " diameter. Bronze yoke.
M023	Insulated shaft extension for $\frac{1}{4}$ "-32 bushing and $\frac{1}{8}$ " shaft. For mounting sub-miniature potentiometer.
M024	Locking insulated shaft extension similar to no. M023.
69043	Steatite ceramic coil form. Adjustable core. Winding space $\frac{1}{4}$ " diameter by $\frac{1}{32}$ " long. Mounting 4-40 hole.
69044	Steatite ceramic coil form. Adjustable core. Winding space 0.187" dia by $\frac{1}{16}$ " long. No. 10-32 mounting.



JAMES MILLEN

MANUFACTURING COMPANY, INC.



"Designed for Performance"®

NO. 90651-A GRID DIP METER

The Millen No. 90651-A Grid Dip Meter features a transistor d.c. amplifier, and taut band meter.

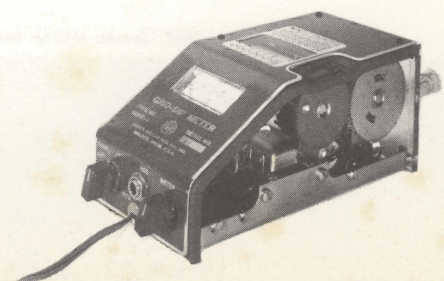
The No. 90651-A has a transistor d.c. amplifier to increase sensitivity. It provides full scale meter reading at all frequencies from 1.7 to 300 mc. It has a modern, taut band meter to eliminate any possibility of the meter ever becoming "sticky." These additions are made while still maintaining all of the features which have made the Millen No. 90651 Grid Dip Meter so thoroughly reliable it has become the standard of the industry. It uses the same stable oscillator without spurious dips, it has a transformer-type power supply, it has seven coils protected by form fitting molded covers, etc.

The No. 90651-A is supplied complete in a convenient polypropylene carrying case which keeps the coil/probes with the Grid Dip Meter and protects both.

Five additional coils are available for extending the range to 165 KC.

The Millen 90651-A Grid Dip Meter is a calibrated stable RF oscillator unit with a transistorized electronic voltmeter to indicate the amplitude of the output. The frequency determining coil is plugged into the unit so that it may be used as a probe.

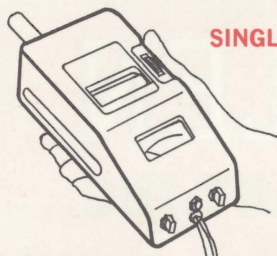
There are a set of terminals on the internal printed circuit board to provide connections for battery operation where it is desirable to use the unit on antenna measurements and other applications where A.C. power is not available. Compactness has been maintained with improvement in performance and convenience of use while still keeping the unusual ease of reading the dial accurately.



JAMES MILLEN

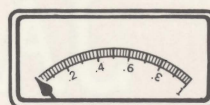
MANUFACTURING COMPANY, INC.

FEATURES OF 90651-A GRID-DIP METER



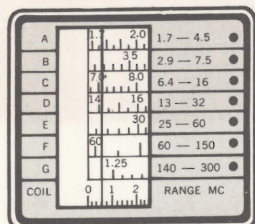
SINGLE-HAND HELD GRID DIP METER

CONVENIENT, one-hand operation permits thumb-setting on any segment of its frequency range; frees second hand.



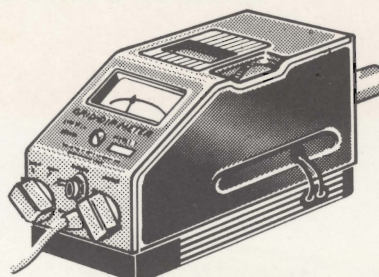
EASY-TO-READ METER

RUGGED METER is placed on the distinctive sloping panel for maximum reading accuracy from the large easy-to-read scale.



EASY-TO-READ DIAL

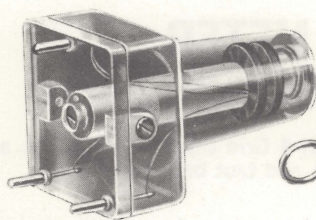
THE CALIBRATED dial is a large 205° drum dial which provides seven direct reading scales plus an additional universal scale.



DESIGNED FOR BATTERY USE

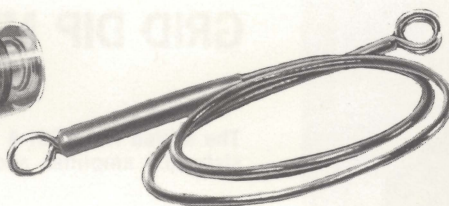
CONNECTIONS are available for battery operation when used away from A.C. power lines; i.e. antenna installations and measurements.

ACCESSORIES FOR USE WITH 90651-A GRID-DIP METER



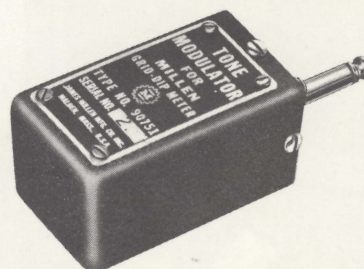
LOW FREQUENCY COIL/PROBES

- No. 46702 — 925 to 2000 KC.
- No. 46703 — 500 to 1050 KC.
- No. 46704 — 325 to 600 KC.
- No. 46705 — 220 to 350 KC.
- No. 46706 — 165 to 220 KC.



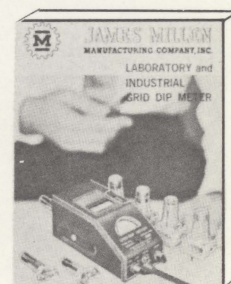
No. 46721 PROBE

The No. 46721 Probe is used under many conditions where it is difficult to couple directly to the unknown circuit.

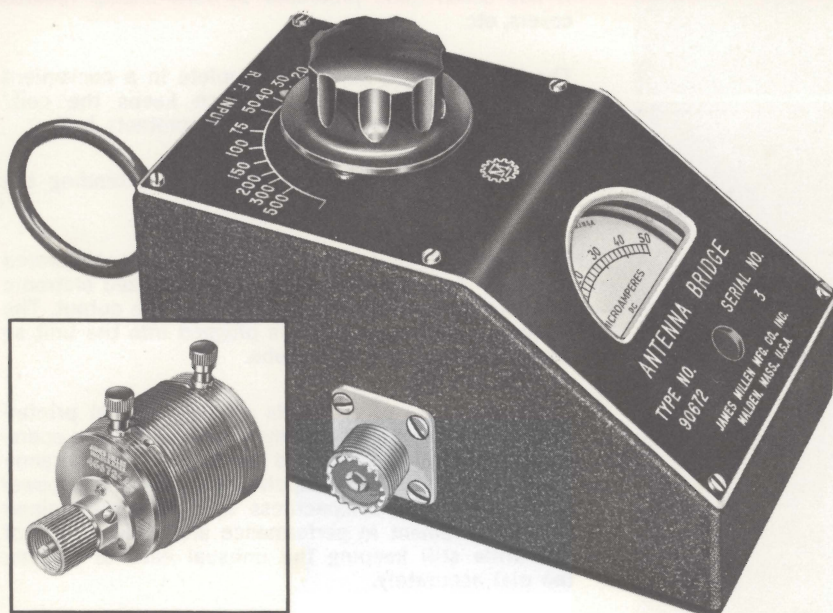


TO NE MODULATOR

The No. 90751 Tone Modulator plugs into the 'phone jack of a Grid Dip Meter to provide 800 cycle modulation.



Also available are Industrial models of the Grid Dip Meter, Nos. 90662 and 90661. Send for Industrial Grid Dip Bulletin.



NO. 90672 ANTENNA BRIDGE

The No. 90672 Antenna Bridge is an accurate and sensitive bridge for measuring impedance in the range of 5 to 500 ohms for unbalanced impedance and 20 to 2000 ohms for balanced impedance (using the 4:1 balun illustrated) at radio frequencies up to 140 mc. The variable element in this bridge is an especially designed differential capacitor of high accuracy and permanence of calibration over a wide range of frequencies. This bridge is entirely unique in design as compared to others designed for the same type of service, because it employs no variable resistors. The No. 90672 was designed to use a Grid Dip Meter, such as the Millen No. 90651 A, as source of RF signal.

COPYRIGHTED, 1967, James Millen Mfg. Co., Inc. • 6710 • Printed in U.S.A.

JAMES MILLEN

MAIN OFFICE



MFG. CO., INC.

AND FACTORY

150 EXCHANGE ST., MALDEN, MASSACHUSETTS, U. S. A.